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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/562,097	12/21/2005	Dirk Leinweber	2003DE430	8105

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EXAMINER	
WANG, CHUN CHENG	

ART UNIT	PAPER NUMBER
1796	

MAIL DATE	DELIVERY MODE
10/28/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/562,097	LEINWEBER ET AL.	
	Examiner	Art Unit	
	Chun-Cheng Wang	1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 September 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *12/21/2005 and 09/06/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claims 1-9 are pending.

Priority

1. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy has been filed in parent Application No. Germany 10329723.5, filed on 07/02/2003.

Specification

2. The abstract of the disclosure is objected to because the abstract is not in single paragraph format. The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. See MPEP § 608.01(b).

Appropriate correction is required.

Claim Objections

3. Claims 1 and 2 are objected to because of the following informalities: Replace "alkolylated" with "alkoxylated" in claim 1, line 4 and claim 2, line 2.

4. Claim 8 is objected: Change "…with the ratio…" to "…with a ratio…" in line 3.

5. Claim 9 is objected: Change "…croslinker selected…" to "…crosslinker selected…".

Appropriate correction is required.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. Claims 2-4 and 9 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claims include "and mixtures thereof" which do not have proper support in the original PCT filing.

8. Claims 1 and 5 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claims include the term "molecular weight" and it is not clear it is number average or weight average molecular weight, which can vary according to the polymer dispersity.

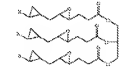
Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

10. Claims 1-3, 5-7 rejected under 35 U.S.C. 102(a) as being anticipated by Leinweber et al. (US2005/0203193 as English equivalent of DE10224275).

Leinweber et al. disclose use of polymers (which is star or branched polymer) in quantities ranging from 0.0001 to 5 % by weight with regard to the oil as demulsifiers for oil-in-water emulsions, wherein the polymers that can be obtained by: alkoxylating an ester obtained with a C_2 to C_4 alkylene oxide so that the average degree of alkoxylation per OH group ranges from 1 to 100 (read on claims 1 and 6). The polymers have an average molecular weight ranging from 500 to 100,000 g/mol (abstract) (read on claims 1 and 5). Formula follows illustrates the ester structure of one starting material derived from glycerol [0026] (read on claims 2 and 3), which can have multiple epoxide groups [0033] (read on claim 2).



The epoxide ring opening may be carried out with or without catalyst (to form hydroxyl groups) [0028] (read on claim 2). Leinweber et al. also disclose alkoxylation by using ethylene and propylene oxides ([0048] – [0052]) (read on claims 1 and 7).

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

12. Claims 1-3, 6-7 rejected under 35 U.S.C. 102(b) as being anticipated by Podubrin et al. (US 6310106).

Podubrin et al. disclose a process for breaking an crude oil emulsion involving: providing an alkoxylated carboxylic acid ester derived by the addition of ethylene oxide and/or propylene oxide (read on claim 1) onto a ring opened epoxidized carboxylic acid triglyceride (read on

claims 2 and 3) which is ring opened with a carboxylic acid; and contacting the emulsion with an amount of the alkoxylated carboxylic acid ester (Abstract). The carboxylic acid could be branched (column 2, lines 62-63) (read on claim 1). The emulsions are separated by adding between 5 and 1,000 ppm (read on claim 1) active substance, based on the total quantity of emulsion--to the emulsion (column 3, lines 36-38). The alkoxylated esters are preferably obtained by addition of 1.0 to 2.5 parts of ethylene oxide and/or propylene oxide onto 1 part of the non-alkoxylated ester, i.e. 7.8-19.7 EO per free –OH group (read on claim 1 and 6), which is calculated from 1770 g (7.5 moles, based on epoxide oxygen) of soybean oil epoxide (column 3, Examples) and 1x to 2.5x of EO used to calculate weight of EO (1770 to 4425 g) then converted to moles of EO and divided by moles of epoxide oxygen. Carboxylic acid could esterize with polyols such as diethylene glycol, pentaerythritol, trimethylol propane and glycerol (column 2, lines 17-37) (read on claim 3). Podubrin et al. disclose esters obtained by addition of ethylene oxide and/or propylene oxide onto epoxidized C_{10-24} carboxylic acid triglycerides, especially soybean oil epoxides, ring-opened with C_{6-18} carboxylic acids are particularly suitable for use as demulsifiers (column 3, lines 31-35). The molecular weight of the demulsifier can be over 7000 g/mole (read on claim 1), i.e. three C_{24} carboxylic acids in the carboxylic acid triglycerides, ring opened with C_{18} carboxylic acids and alkoxylated with 2.5 parts of ethylene oxide onto non-alkoxylated ester.

Claim Rejections - 35 USC § 103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

14. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

15. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Podubrin et al. (US 6310106) in view of Hult et al. (US 5418301).

The disclosure of Podubrin et al. is adequately set forth above and is incorporated herein by reference.

Podubrin et al. is silent on using the claimed carboxylic acids.

Hult et al. disclose the carboxylic acids for manufacturing the dendrimer macromolecule having at least two hydroxyl groups wherein one or more of the hydroxyl groups are hydroxyalkyl substituted such as α,α-bis(hydroxymethyl) -propionic acid (dimethylolpropionic acid), α,α-bis -(hydroxymethyl)-butyric acid, α,α,α-tris(hydroxymethyl)-acetic acid, α,α-bis(hydroxymethyl)-valeric acid, α,α-bis(hydroxy)propionic acid or α-phenylcarboxylic acids having at least two hydroxyl groups directly pendant to the phenyl ring (phenolic hydroxyl groups) such as 3,5-dihydroxybenzoic acid. The acids with one or more of the hydroxyl groups are hydroxyalkyl substituted, can also advantageously be used as chain extenders (column 4, lines 5-16). The chain extender offer more hydroxyl groups for alkoxylation.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains to utilize the carboxylic acids that Hult et al. teach for chain extending and further alkoxylation of the dendrimer macromolecules to demulsify crude oil.

16. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Podubrin et al. (US 6310106) in view of Hult et al. (US 5418301).

The disclosure of Podubrin et al. is adequately set forth above and is incorporated herein by reference.

Podubrin et al. is silent on the claimed molecular weight.

Hult et al. disclose molecular weight of the dendrimer macromolecules ranging from 5600 to 91000 g/mole (column 27, TABLE 7). It is know that higher molecular weight polymer required more synthesis steps and longer time to manufacture and then cost more to make it. Increase of molecular weight will increase viscosity of the polymer and could be more difficult to handle. The case law has held that "A particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation." In re Antonie, 559 F.2d 618, 195 USPQ 6 (CCPA 1977)

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains to optimize the manufacturing steps (i.e. the cost) and/or the desired viscosity (i.e. handling) to reach the claimed molecular weight for the dendrimer macromolecules to demulsify crude oil.

17. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Podubrin et al. (US 6310106).

The disclosure of Podubrin et al. is adequately set forth above and is incorporated herein by reference.

Podubrin et al. is silent on ethylene and propylene oxides ratio from 1:2 to 1:10 for alkoxylating the dendrimer molecular.

The moiety of the polypropylene oxide is more rigid than polyethylene oxide and has higher solubility in oil thus provide larger interface to separate oil and water. The case law has held that "A particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation." In re Antonie, 559 F.2d 618, 195 USPQ 6 (CCPA 1977)

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains to optimize the ethylene and propylene oxides ratio to obtain the claimed ratio from 1:2 to 1:10 for alkoxylating the dendrimer macromolecules to demulsify crude oil.

18. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Podubrin et al. (US 6310106) in view of Hult et al. (US 5418301).

The disclosure of Podubrin et al. is adequately set forth above and is incorporated herein by reference.

Podubrin et al. is silent on crosslinking the dendritic macromolecules.

Hult et al. disclose polyfunctional carboxylic acids and/or corresponding anhydrides such as maleic anhydride, isophthalic acid, adipic acid, succinic acid and trimellitic anhydride are suitable as chain stoppers (column 5, lines 36-44) which would then control polymer molecular weight. The polyfunctional carboxylic acids and/or corresponding anhydrides will also act as crosslinking agent in polymerization to improve polymer mechanical property.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains to utilize the teaching from Hult et al. to use the polyfunctional carboxylic acids and/or corresponding anhydrides as claimed crosslinking agent for the manufacturing of the dendrimer macromolecules for demulsifying crude oil.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chun-Cheng Wang whose telephone number is (571)270-5459. The examiner can normally be reached on Monday to Friday w/alternate Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu can be reached on 571-272-1114. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ling-Siu Choi/
Primary Examiner, Art Unit 1796

Chun-Cheng Wang
Examiner
Art Unit 1796

/CCW/